

ABSTRACT

The present invention provides a magnetic memory device based on a novel driving method realizing reliable writing and a method of writing the magnetic memory device. Four parallel portions are formed in a pair of loop-shaped write lines (6Xn) and (6Yn). Magnetoresistive devices (12A) and (12B) disposed in the parallel portion in an upper stage construct a memory cell (12Ev), and magnetoresistive devices (12A) and (12B) disposed in the parallel portion in a lower stage construct a memory cell (12Od). When current in the direction from the drive point A to the drive point B is passed from the current drives (123n) and (133n), the directions of the currents in the write lines (6Xn) and (6Yn) are aligned in the parallel portion of the memory cell (12Ev) but are opposite to each other in the parallel portion in the memory cell (12Od). In the memory cell (12Ev), induced magnetic fields enhance each other, and the magnetization directions of the magneto-sensitive layers of the magnetoresistive devices (12A) and (12B) are anti-parallel with each other. In the memory cell (12Od), the induced magnetic fields cancel each other out.